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# Prevention of Mental Disorders in Late Life

Pim Cuijpers<sup>1</sup>, Filip Smit<sup>2</sup>, Barry D. Lebowitz<sup>3</sup> and Aartjan T. F. Beekman<sup>4</sup>

<sup>1</sup>*Department of Clinical Psychology and EMGO Institute for Health and Care Research, VU University and VU University Medical Centre, Amsterdam, The Netherlands*

<sup>2</sup>*Trimbos Institute (Netherlands Institute of Mental Health and Addiction), and EMGO Institute for Health and Health Care Research, VU University Medical Centre, Utrecht, The Netherlands*

<sup>3</sup>*University of California, San Diego School of Medicine, La Jolla, CA, USA*

<sup>4</sup>*Department of Psychiatry VU Medical Centre and GGZ inGeest and EMGO Institute for Health and Care Research, VU University and VU University Medical Centre, Amsterdam, The Netherlands*

## INTRODUCTION

Prevention in the mental health field has been seen, traditionally, as an area that has been implicitly restricted to issues in childhood and adolescence. If anything, prevention in geriatrics was seen as an oxymoron. Theory and research in prevention were, for a long time, restricted to issues of child development and intervention early in the life course. In an influential report, the Institute of Medicine (IoM) of the US National Academy of Sciences assessed the state of knowledge in prevention research in the 1990s, but could find hardly any studies aimed at prevention of mental disorders in older adults<sup>1</sup>. A more recent follow-up report on prevention of mental disorders by that same institute is aimed completely at children, youth and young adults, while prevention in older adults is not mentioned at all<sup>2</sup>.

At the same time, however, prevention of mental disorders in older adults has been the focus of a new line of research. This research has resulted in a growing body of knowledge on how to identify those with the highest risk of developing a mental disorder, several preventive interventions, and some randomized controlled trials showing that prevention may be possible and effective in older adults. Furthermore, considerable progress has been achieved in the field of prevention of mental disorders for younger adults in recent years. The growing number of randomized controlled trials has shown that prevention of depressive and anxiety disorders in adults in general is probably effective, and there is no reason to assume that interventions which are effective in younger adults would not be effective in older adults.

Why be concerned with prevention in late life? As is well covered in other sections of this text, there is the demographic imperative brought about by the overall ageing of the world population and in particular by the ageing of the older population. As pointed out in the classic paper by Kramer (1980)<sup>3</sup>, the same dynamics: public health measures, technological development and lifestyle changes, that created this growth in the overall population were also relevant to growth of the population of those with chronic illnesses and disabilities. They

conclude that, in the absence of cures or effective preventive strategies, we will see an explosion in the number of older persons with serious and persistent disabling illnesses, particularly mental disorders. The availability of more efficacious treatments and the accessibility of appropriate services in the community combined to produce huge gains in the life expectancy of those with mental disorders, who in earlier times would have died long before reaching old age. This demographic imperative leads to the conclusion that prevention must be an important part of the agenda of geriatric psychiatry.

For example, major depression currently affects about 3.6–4.8% of persons of 60 years or older, and many more report clinically relevant depressive symptoms<sup>4,5</sup>. At this moment, major depression in all age groups is the fourth disorder worldwide in terms of disease burden, and it is expected to be the disorder with the highest disease burden in high-income countries by the year 2030<sup>6</sup>. Furthermore, the prevalence of depressive disorders in older adults is projected to double from its present level by 2050<sup>7</sup>. Depression is not only a highly prevalent disorder, but it is also associated with a huge loss of quality of life in patients and their relatives<sup>8,9</sup>, with increased mortality rates<sup>10</sup>, with high levels of service use and with enormous economic costs. The economic costs of depression in the United States were estimated to be \$83 billion in 2000<sup>11</sup>.

Another reason why prevention is important is that current treatments can reduce the disease burden of depression only to a limited extent. A recent study in Australia estimated that about 16% of the disease burden of major depression is averted in the current health system<sup>12</sup>. Because many patients do not receive an evidence-based treatment, this percentage could rise to 23% if all patients received such an evidence-based treatment. Furthermore, about 40% of all people with a depressive disorder do not receive any treatment. If it would be possible to deliver treatment to all patients with a depressive disorder, 34% of the disease burden of depression could be averted. So, although current treatments are usually considered to be effective in treating depressive disorders, it is estimated that these treatments can reduce the disease burden of

depression by a maximum of 34%<sup>12</sup>. Prevention of the incidence of new cases of major depression has been suggested as an alternative for treatment which may reduce a part of the 66% of the disease burden which is not averted by current treatments<sup>13,14</sup>.

In the current chapter we will give an overview of the field of prevention of mental disorders in older adults. First, we will give a definition of prevention in the mental health field. Then we will focus on recently developed methods of identifying the optimal high-risk groups for preventive interventions. Finally, we will describe the interventions that have been developed and the results of research examining the effects of these interventions.

## WHAT IS PREVENTION?

The traditional public health view derives from infectious disease and is divided into primary, secondary and tertiary prevention. Primary prevention is directed towards maintaining health by isolating the causes of disease and eliminating or counteracting them. Secondary prevention is directed towards enhancing recovery by case identification and prompt intervention early in the course of illness. Tertiary prevention is directed towards those already ill and emphasizes treatment and rehabilitation.

There is a growing consensus that the traditional public health view is not optimal in mental health. The components of this approach including, for example, concepts such as pathogens, risk factors, disease vectors and definitions of caseness do not translate easily into psychopathology or chronic disease. In the definition of depression which is currently used by most researchers and practitioners in the mental health field, prevention comprises all interventions which are conducted before subjects meet the formal criteria of a mental disorder (according to the DSM-IV<sup>1</sup>). Curative interventions are given to persons who suffer from acute disorders, and maintenance treatments are given to patients with chronic disorders. In this spectrum of interventions, three types of prevention can be distinguished:

**Universal prevention** is aimed at the general population or parts of the general population, regardless of whether they have a higher than average risk of developing a disorder. The best-known examples of universal prevention include school programmes aimed at all students, whether they have an increased likelihood of developing a mental disorder or not; and mass media campaigns, aimed at the general population.

**Selective prevention** is aimed at high-risk groups, who have not yet developed a mental disorder. High-risk groups include people who have recently experienced a stressful life event or who experience a chronic stressor, such as divorce, losing a family member through death, caring for an ill family member, and unemployment.

**Indicated prevention** is aimed at individuals who have some symptoms of a mental disorder but do not meet diagnostic criteria.

In this chapter, we will give an overview of selective and indicated preventive interventions for older adults. Because universal interventions have not been developed systematically or examined in well-designed trials, we will not discuss these possibilities here. Then we will look at the research examining whether preventive interventions are actually capable of preventing the incidence of new cases of mental disorders, and we will describe new methods of identifying optimal target groups for prevention of mental disorders in older adults.

## SELECTIVE PREVENTION

In the past decades, several indicated preventive interventions for older adults have been developed, including interventions aimed at widows and widowers, caregivers of frail older adults, older adults with a chronic general medical illness, and inhabitants of homes for the elderly and nursing homes. Several of these interventions are not specifically aimed at older adults, because there are also younger adults who lose their spouse or get a chronic general medical disorder, but the chance of belonging to such a high-risk group is much greater among older adults. Therefore, it seems reasonable to consider such interventions as prevention for older adults.

One important group of selective preventive interventions is aimed at widows and widowers. They are an important high-risk group for mental disorders<sup>15</sup>, and several preventive interventions have been developed, including social support groups and widow-to-widow programmes. In social support groups, widows and widowers come together in small groups to exchange experiences and emotions, with a clear preventive focus. However, research examining the effects of these groups has not resulted in strong evidence for their effectiveness<sup>16</sup>. Another preventive intervention developed for widows and widowers are the so-called 'Widow-to-widow' programmes<sup>17,18</sup>. In these programmes, widows who have recently lost their spouse are visited by another widow who lost their spouse some time earlier. Early research showed promising effects of these programmes, but a larger recent trial did not find any beneficial health effects of such a programme<sup>19</sup>.

Another group of selective preventive interventions is aimed at caregivers of frail older adults. Because of the stressful situation they live in and the burden of care, this is an important high-risk group for the development of mental disorders<sup>20</sup>. Several types of interventions have been developed for caregivers, many of which have a clear preventive goal in terms of preventing mental disorders or severe stress-related problems. Interventions for these caregivers include support groups and psycho-educational interventions<sup>21</sup>, respite care<sup>22</sup>, home visits<sup>23</sup>, and multi-component interventions in which different interventions are combined and adapted to the need of the caregiver<sup>24</sup>. Research examining these interventions has typically resulted in small to moderate effect sizes on mental health outcomes in caregivers, with limited clinical impact<sup>25,26</sup>, although multi-component interventions seem to be more effective<sup>27</sup>.

Several multifaceted interventions have been developed for the prevention of late-life depression in residential care<sup>28,29</sup>, where the prevalence of depressive disorders is very high<sup>30</sup>. Such interventions focus on the training of nurses and doctors, on consultation and on supportive interventions for the residents. A few trials have found encouraging effects of these interventions<sup>28,29</sup>. Another study found significant effects for screening and early intervention in residential homes for the elderly<sup>31</sup>, although this should be considered as indicated prevention or even treatment.

Older adults with chronic general medical illnesses are another important target group for selective prevention. In this area, several well-designed studies have been conducted, and these studies have actually examined whether preventive interventions are capable of preventing the onset of new cases of mental disorders. Rovner and colleagues (2007)<sup>32</sup> screened older patients with neovascular macular degeneration, and found that problem-solving treatment resulted in a significantly lower incidence rate of new cases of depressive disorders at two and six months follow-up. Robinson and colleagues



(2008)<sup>33</sup> found that both problem-solving treatment and antidepressive medication resulted in a significantly lower incidence rate of major depressive disorders in stroke patients.

This overview of selective preventive interventions is not comprehensive, but it gives a good idea of the possibilities that are available for developing preventive interventions for older adults at risk of getting a mental disorder.

## INDICATED PREVENTION

In the past decades, several indicated preventive interventions, aimed at older adults with sub-threshold symptoms but no mental disorder, have been developed. Until now, these interventions have focused mainly on depression. The first type of indicated prevention we want to present is the psycho-educational 'Coping with Depression' course (CWD). This intervention was originally developed as a group treatment for depression. However, because of its psycho-educational nature, it can also be applied relatively easy as a preventive intervention. As we will see later on, the CWD (for all age groups) has been used in 6 of the 19 randomized controlled trials which have examined the effects of prevention on the incidence of major depression in those who did not have a depressive disorder at baseline.

The CWD is a cognitive behavioural intervention which is usually conducted in group format with 8 to 12 participants. Because of the psycho-educational format, there is no therapist or patient, but only teachers and students. Therefore, older adults with depressive symptoms do not have to go into treatment, but only go to a course where they learn how to improve their mood. Apart from behavioural activation, the students also learn cognitive restructuring skills, and social skills. The CWD is not only used in older adults, but also in many other target groups, including adolescents, minority groups, primary care patients, and general medical patients. There is much research examining the effects of the CWD as treatment of existing depressive disorders and as prevention of new cases<sup>34,35</sup>. These studies show that the CWD is an effective treatment for depression, but is also effective in preventing new cases of depressive disorders. A recent randomized controlled trial in the Netherlands, where the CWD is offered as a preventive intervention to older adults in about 80% of the regions, showed that the CWD effectively reduces the level of depressive symptoms in participants in these courses<sup>36</sup>. However, this study also showed that about 40% of the participants in these courses in routine care did have an established major depressive disorder, and so it cannot be seen as a purely preventive intervention. However, because of the low threshold for participation, and the reluctance of many older adults to seek treatment for existing depressive disorders<sup>37</sup>, this does not seem to be a problem from a public health point of view.

Another preventive intervention for depression in older adults is life review and reminiscence. In life review interventions, older adults discuss their life and the evaluation of each important period in their life with a trained professional. Several randomized controlled studies and meta-analyses have shown that these interventions are effective in reducing existing depressive symptoms<sup>38</sup>, as well as increasing life-satisfaction and emotional well-being<sup>39</sup>. Although the effects have not yet been examined in target groups in which sub-threshold depression was established with a diagnostic interview, life review seems to be an excellent intervention for indicated prevention, because of its low threshold for participation, because the stigmatizing word 'depression' is not needed, and because no understanding of negative thoughts or other complex psychological issues is necessary for participating successfully in this intervention.

More recently, the internet has been found to offer promising new opportunities for the prevention of mental disorders in all age groups, including older adults. A considerable number of studies have found that internet-based cognitive behaviour therapy (CBT) is effective in the treatment of depression and anxiety disorders<sup>40</sup>. In one study, internet-based CBT has been found to be effective in the treatment of sub-threshold depression in older adults<sup>41</sup>, which can be seen as indicated prevention. This study showed that internet-based CBT had large effects on depressive symptomatology in older adults, and was as effective as a preventive group intervention.

Another recent development is the use of stepped-care models for the prevention of depressive disorders in older adults with sub-threshold depression or anxiety<sup>42,43</sup>. In a large, randomized, controlled trial, older adults with sub-threshold depression or anxiety were recruited from primary care and assigned to a preventive stepped-care programme or usual care. Stepped-care participants sequentially received watchful waiting, CBT-based bibliotherapy, CBT-based Problem Solving Treatment, and finally referral to primary care for medication, if required. It was found that cumulative incidence of DSM-IV major depressive disorder or anxiety disorder after 12 months was reduced from 24% (20/84) in the usual care group to 12% (10/86) in the stepped-care group, which indicates a relative risk of 0.49 (95% confidence interval: 0.24–0.98). These results are better than those found in the meta-analysis of preventive interventions for depression<sup>44</sup>, and may indicate that stepped care is an excellent method for the prevention of mental disorders in older adults.

## IS IT POSSIBLE TO PREVENT THE INCIDENCE OF MAJOR DEPRESSION?

In the past decades, hundreds of controlled studies have examined the effects of mental health programmes aimed at preventing mental health problems in children, adolescents, adults and older adults<sup>14,20</sup>. This considerable body of research has shown that some prevention programmes in mental health are capable of strengthening protective factors, such as social skills, problem-solving skills, stress-management skills, pro-social behaviour and social support; that these programmes can reduce the consequences of risk factors, psychiatric symptoms and substance use; and that they may have positive economic effects. Despite this large body of research, however, relatively few studies have examined whether these prevention programmes are actually capable of reducing the incidence of new cases of mental disorders defined according to diagnostic criteria, although this research question can easily be regarded as one of the most important ones, both from a public health perspective and from a scientific point of view.

In the past 15 years, a growing number of studies has examined whether it is possible to prevent the incidence of mental disorders in persons who do not have an established disorder at the start of the preventive intervention. Most of these studies are aimed at the prevention of depression<sup>44</sup>, and some are aimed at the prevention of anxiety disorders<sup>45–48</sup>. A recent meta-analysis of studies examining the effects of preventive interventions on the incidence of depressive disorders found that the incidence rate ratio of developing a depressive disorder was 0.78 (95% confidence interval: 0.65–0.93) for participants in the prevention conditions compared to control subjects, which indicates that participants in the preventive interventions have 22% less chance of developing a depressive disorder in the next year<sup>44</sup>.



Only a few of the studies in this area have been conducted with older adults<sup>32,33,43</sup>, but those that have been conducted find results which are comparable to the studies that have been conducted with younger adults. More research is clearly needed to establish the possibility of preventing the incidence of mental disorders in older adults, but research in younger adults suggests that this is a promising field of investigation.

## IDENTIFYING TARGET GROUPS FOR PREVENTIVE INTERVENTIONS

As we have seen earlier in this chapter, several interventions have been developed for older adults who are at risk for developing a mental disorder, such as caregivers of frail elderly, those who have lost their spouse, people who have chronic general medical disorders, and people with sub-threshold depression. Although many of such risk indicators for mental disorders are known, their specificity is low. This means that most people in these high-risk groups will never develop a mental disorder<sup>14,49</sup>. Although much epidemiological research is available showing that such indicators are associated with an increased risk of developing a mental disorder, this research is not very useful in identifying the optimal high-risk groups for preventive interventions. The traditional indicators of the strength of a predictor for the incidence of such disorders, such as a relative risk or odds ratio, are not sufficient for identifying the best target populations for preventive interventions. Suppose, for example, that the risk of developing a major depressive disorder in the general population is 2.5% in one year<sup>50,51</sup>. If a high-risk group has a relative risk of developing a depressive disorder of 4.00, this will be highly significant (if the research population is large enough). But, this means that still only about 10% of the high-risk group will actually develop a depressive disorder, and 90% will not. A high-risk group will probably be difficult to motivate for participation in a preventive programme if only 10% eventually will develop the disorder, apart from the question of whether it is ethically acceptable to intervene in such a population. Furthermore, such an intervention is probably not very efficient and cost effective, because by far the majority will never develop a disorder and the intervention has no preventive effect in this majority.

Recently, more advanced methods have been developed to identify the optimal target groups for preventive interventions in at-risk older adults. After the identification of significant risk indicators, this method starts with calculating three other statistics that can help us in identifying the optimal target populations. First, the exposure rate (ER), which gives the percentage of the population exposed to the risk indicator. The second statistic is the population attributable fraction (AF), which indicates by how many percentage points the current incidence rate of depression in the population would be reduced if the adverse effect of the risk indicator is completely blocked<sup>13,52</sup>. This equals the maximum possible impact of a completely successful preventive intervention. Third, the number-needed-to-be-treated (NNT) can be interpreted as the number of people that should be targeted by a preventive intervention to avoid the onset of the disorder in one person (assuming that the preventive intervention is completely successful in containing the adverse effect of the risk factor).

When target populations for preventive interventions are selected, the ER and the NNT should be as small as possible, while the AF of the target population should be as high as possible. This allows us to identify small target populations with the largest possible proportion of new incident cases, while the number of subjects that

have to be treated with the preventive intervention is as small as possible. There are several ways of finding the most optimal combinations of risk indicators (small ER and NNT, large AF), including a straightforward exploration of all possible combinations of significant risk indicators<sup>13</sup>, but also more sophisticated methods such as CART analyses (classification and regression tree analysis), and bootstrap aggregation (bagging).

In one study, it was found that older adults with (subclinical) depressive symptoms, functional limitations, a small social network, and female gender comprised only 8% of the total older population (ER), while 24.2% of the new incident cases could be attributed to this group (AF)<sup>53</sup>. The number of subjects from this population that would have to receive a preventive intervention in order to prevent one incident case (NNT) was 4 (assuming that the intervention was 100% successful). In another prospective study among older adults, CART analyses were used to identify the optimal groups for indicated prevention (high-risk groups) and universal prevention (sub-threshold depression present)<sup>54</sup>. In the selective prevention model, spousal death showed the highest risk, becoming even higher if the subjects also had a chronic illness. In the indicated prevention model, sub-syndromal symptoms of depression were associated with a risk of almost 40% of developing depression and an NNT of 5.8, accounting for 24.6% of new cases. Adding more risk factors raised the absolute risk to 49.3%, with a lower NNT, but also lower AF values. Overall, the attributable fraction values in the indicated model were found to be higher, identifying more people at risk. A third prospective study was aimed at the identification of the optimal target groups for prevention of anxiety disorders among older adults<sup>55</sup>. In this study it was found that several factors were significantly associated with increased risk of developing anxiety, including sub-threshold anxiety, depression, two or more chronic illnesses, poor sense of mastery, poor self-rated health and low educational level.

Although this methodology of identifying the optimal target groups for preventive interventions in epidemiological research has been developed well, it has not yet been used in actual intervention studies. Designing such studies is certainly one of the most important challenges for interventions researchers in the years to come.

## CONCLUSIONS

In this chapter, we have tried to illustrate why prevention of depression in older adults is important. Reasons for its importance include its very high prevalence, incidence, disease burden and the huge economic costs of depression. It is also important because current treatments can reduce the disease burden by about one-third, while two-thirds cannot be avoided, even when only evidence-based treatments are given and all depressed patients receive such an intervention.

We also showed that traditional epidemiological research cannot identify the best target populations for prevention. Relatively simple statistics, such as the exposure rate, the population attributable fraction, and the numbers-needed-to-be-treated can be used to select those high-risk groups which are as small as possible, but explain as many of the new incident cases as possible.

Research in the past decade has also shown that preventive interventions in all age groups are probably effective and can reduce the incidence by about one-quarter, and the few studies that have been conducted with older adults find comparable results. Psycho-educational cognitive behaviour therapy is the most used preventive intervention for depression and is already implemented in some countries. In the next few years, the internet will probably give new



opportunities for the broad implementation of preventive interventions, because access is easy, scalable, economically affordable and effective. Another important development is stepped-care interventions with more intensive treatments when no reduction of depressive symptoms has been realized. It is expected that this type of intervention will be able to reduce the incidence of depression in older adults further.

There is a significant epidemiological transition towards older age and greater morbidity. This process is equally manifest in the workforce for health. After all, the average age of the health care professionals is increasing rapidly. To illustrate, over 50% of the nurses in the European Union are older than 45 years, and their mean age is still on the increase. Increasing demands for health care and restricted supply is one of the key problems in the near future. Therefore a health care system needs to be able to produce significant health gains in an acceptable, effective, scalable and economically affordable way. Empowering people to become the managers of their own good health via preventive self-help interventions offered over the internet is probably one of the most important steps that we need to take now for a better future.

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